

SECTION 2.3.7

ALBION RIVER WATERSHED

Based on the recognition that the anadromous fishery is in decline, activities to assess the watershed and improve conditions for anadromous salmonids are underway. A Clean Water Act Section 303(d) TMDL waste reduction strategy for sediment has been completed in draft and awaits approval by USEPA. The following provides an overview of activities and outlines our basic framework and strategy at this time.

WATERSHED DESCRIPTION

The Albion River watershed drains an area of approximately 27,500 acres, about 43 square miles. The Albion River estuary is located near the town of Albion and is approximately 16 miles south of the city of Fort Bragg. It primarily drains from the east to the west, sharing ridges with the Big River watershed to the north and northeast and the Navarro River watershed to the southeast and south. Elevations range from sea level to 1,566 feet. The main tributaries of the Albion River include: Railroad Gulch, Pleasant Valley Creek, Duck Pond Gulch, South Fork Albion River, Tom Bell Creek, North Fork Albion River, and Marsh Creek. The Mendocino Redwood Company ("MRC"), an industrial forestry company, owns approximately 54% of the land contained in the Albion River watershed. MRC property is concentrated in the Lower Albion River, Middle Albion River, and South Fork Albion River planning watersheds. Smaller industrial timberland ownerships, a few ranches, and numerous small parcels, typically private residences, make up the balance. Public ownership is limited to several parcels owned by Mendocino County and various school districts and community services districts. Population centers are the towns of Albion and Comptche.

The watershed is dominated by two distinct landforms: the relatively flat marine terraces extending several miles inland, and intervening deeply incised inner gorges of the major river channels and streams that dissect these surfaces. The geology of the Albion River watersheds is part of the Coastal Belt Franciscan Complex. A large part of the geology of the Upper Albion River watershed is Coastal Belt Franciscan Complex – greenstone formation. Terrace deposits are found in the upper Albion River watershed around Comptche and around the North Fork Albion above Soda Spring Creek. Marine Terrace deposits are in the south part of the lower Albion River watershed. On the north end of the lower Albion River watershed Marine Terrace deposits are found. In a narrow strip along the lower mainstem and along Tom Bell Creek sedimentary rocks are found. Two small areas of alluvial fan/colluvium are found at the upper part of the South Fork Albion watershed.

The Mediterranean climate in the watershed is characterized by a pattern of low-intensity rainfall in the winter and cool, dry summers with coastal fog. Mean annual precipitation is about 40 inches at Fort Bragg near the western margin of the watershed and about 50 - 55 inches at Willits to the east. About 90% of the precipitation in this area falls between October and April, with the highest average precipitation in January. Snowfall in this watershed is very rare and hydrologically insignificant.

The Albion River, like the other coastal watersheds in Mendocino County, lies in the Oregonian Biotic Province. As with these other watersheds, redwood and Douglas Fir forest dominate the Albion River watershed. A 1949 survey identified the following assemblages: redwood and fir forest, laurel and poison oak, chaparral, salt marsh, sedge, coast hemlock, cypress, red alder, velvet grass, blackberry, bull thistle, and tangled underbrush. The Albion River has a large estuary with tidal intrusion extending as much as five miles. It contains over two miles of eel grass beds, as well as algae, sea-lettuce, rock weed, and red laver.

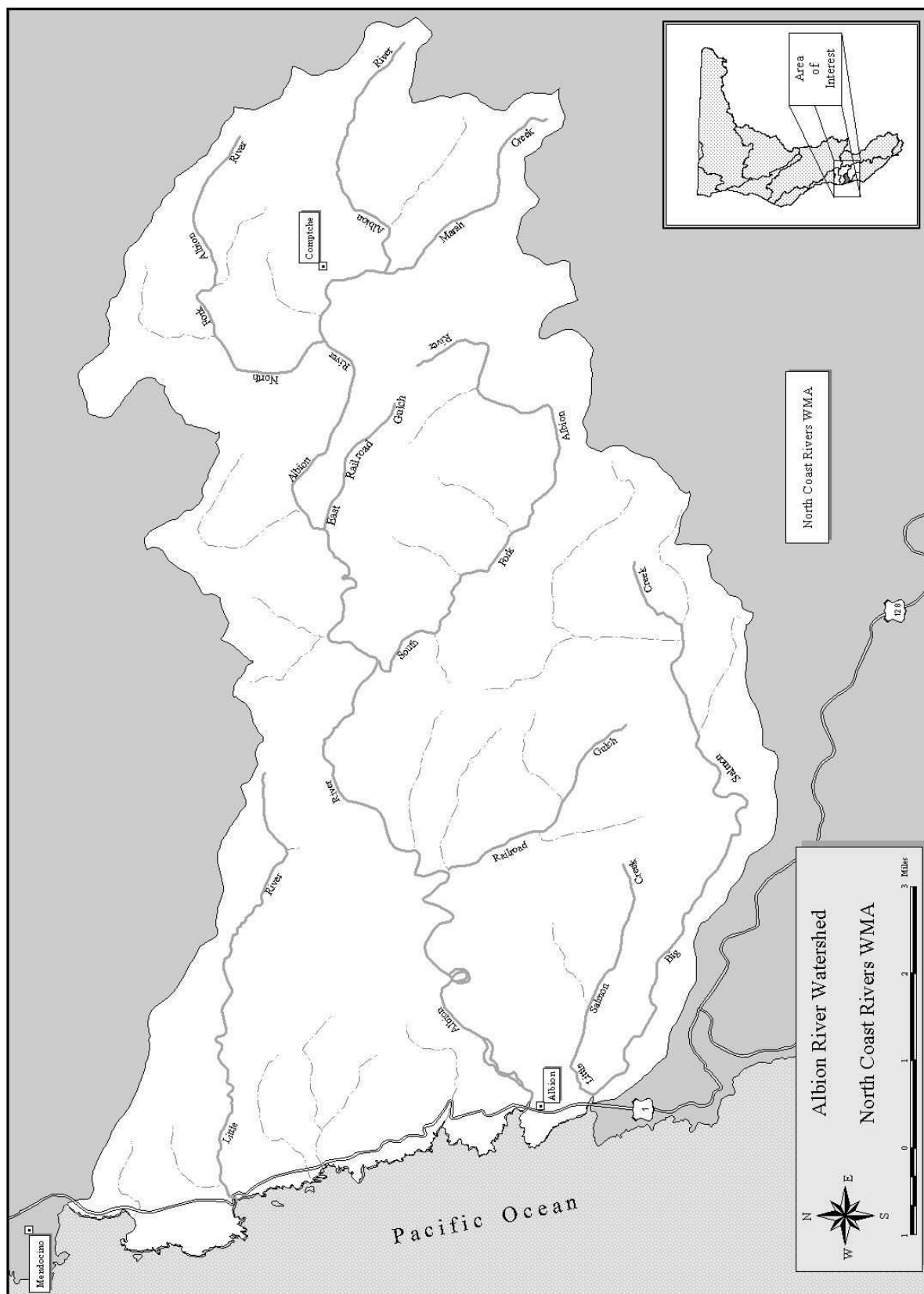


Figure 2.3.7.1 Albion River Watershed

Historic data regarding salmonid abundance and distribution in the Albion River watershed are limited. There are no quantitative data from which to estimate the historic population size of coho and steelhead in the Albion River watershed although there is general agreement that the populations of both have decreased substantially and continue to decline.

The history of the Albion River watershed is dominated by timber harvest. Logging began in the lower basin about 1852, around the time that the first mill was constructed near the lagoon upstream from the mouth of the Albion River. The capacity of the mill was quite small initially, but was expanded to over 10 times its original capacity by 1906. The Albion River Railroad, later sold to Southern Pacific Railroad, began in 1885. The first mill operated until 1928. A number of smaller mills operated in the Comptche area between the mid 1930's and the 1960's. Since 1940, tractor yarding and the construction of roads, skid trails and landings have been the primary types of logging practices.

Until the Forest Practice Rules Act was passed in 1973, logging practices were unregulated. This Act required road construction and timber harvesting practices intended to protect aquatic habitat and watershed resources. During the past twenty years, the use of cable yarding on steeper slopes has increased substantially, and tractor logging is generally restricted to gentler slopes. Cable yarding creates far less ground disturbance than tractor yarding. Tractor yarding is still responsible for a significant amount of the harvest on some ownerships. Relative to the 1890-1928 period, harvest levels were apparently far lower between 1930 and 1960, because the forest was fairly well depleted and was left to regenerate. Current harvest levels have increased significantly with the maturity of second growth.

Albion River estuary as an example of a drowned river valley resulting from a rise in sea level. Tidewater influence extends 4.5 to 5 miles upstream. The mouth of the river is defined by a narrow opening along the south side of the bay protected by rock headlands. This embayment reduces long ocean swell and sea height, which reach the mouth of the river. It also minimizes wave-induced longshore sediment transport, which causes the mouths of many California rivers to close during low flow periods due to sand bar formation. The mouth has aligned itself such that it discharges at the point of lowest wave energy, which allows the stream to remain open to the sea year around. The estuary is used as a commercial and sport fishing harbor and contains a small boat basin.

The Albion River estuary has undergone changes since the logging era that began in the early 1850s. In the early period the estuary was used as a mill pond and transportation corridor to get logs to the mill. A series of dams was also used to transport logs downstream. At least five dam sites that were used in a synchronized fashion to transport logs downstream have been identified. The first railroad to transport logs was built up one of the lower Albion tributaries in 1881. In the mid-1880s a railroad to transport logs to the upper estuary was built along the Albion River from Tidewater Gulch upstream several miles. The Albion Mill eventually closed in 1928 and the railroad discontinued service in 1930. The estuary channel was described as being from 30 to 50 feet wide and 20 to 25 feet deep in the 1940s, well after the modifications resulting from erection of mills, the railroad, mill ponds and dams. In 1961, CDFG estimated the average depth to be five feet with a maximum depth of 20 feet. In 1966, CDFG estimated the average depth to be eight feet.

The beneficial uses impaired by excessive sediment in the Albion River watershed are primarily those associated with the salmonid fishery: commercial sport fishing (COMM), cold fresh water habitat (COLD), estuarine habitat (EST), migration of aquatic organisms (MIGR) and spawning and reproduction and/or early development (SPWN).

IMPLEMENTATION STRATEGY

Strategy development will occur in the form of the TMDL waste load reduction strategy for sedimentation. The TMDL is tied to resource impacts and reduction of sources to reduce impacts and bring the watershed into a desired future condition that is consistent with the enhancement and maintenance of salmonid species. A broad interagency effort was used to gather and assess existing information on the watershed. Likewise, the development of the strategy incorporated significant interagency and public coordination.

Other concerns in the watershed will continue to be addressed through existing programs. Given current funding constraints, any new and/or redirected resources should be focused on staffing for field nonpoint source compliance and enforcement inspections.

Institutional framework

The *Water Quality Control Plan for the North Coast Region* (Basin Plan) contains specific water quality objectives and implementation programs to protect and enhance identified beneficial uses of water. The over-arching regulatory provisions of the Basin Plan are the Action Plan for Logging, Construction and Associated Activities and the Nonpoint Source Action Plan. The SWRCB and CDF/BOF entered into a Management Agency Agreement, which delegates primary water quality authority to the CDF/BOF associated with timber harvest regulation. The Regional Water Board has not given up any authority to regulate timber if violations of the Basin Plan occur or threaten to occur. Regulatory activities associated with timber harvest are conducted in accordance with that agreement.

ASSESSMENT AND PROBLEM IDENTIFICATION

Generally, the most sensitive beneficial use in the Albion River watershed, protection of cold water fish species, is limited by habitat conditions that include excess sediment, lack of complex, deep pools, fair to poor spawning gravels and limited shelter. Excess sediment is adversely impacting the number and volume of pools. Sediment is also causing a moderate to high embeddedness of substrate and spawning gravels in the basin. Shelter is poor throughout the basin. In general, habitat conditions in most locations in the watershed are moderately degraded. However, recently increased road building and timber harvest activities may cause additional degradation in the future, not reflected in current stream habitat conditions. Conditions are more degraded in the South Fork Albion watershed than in the other three subwatersheds.

Data on the salmonid population in the Albion River watershed is sparse, but show that coho salmon (*Oncorhynchus kisutch*) and steelhead trout (*O. mykiss*) spawn and rear in the watershed, although at low numbers. Coho and steelhead populations appear to be in decline.

Although greatly reduced from historic levels, low numbers of coho and steelhead are found distributed throughout the basin. It is believed that native California coho populations have declined by 80 to 90% from their numbers in the 1940s. Data from NMFS regarding commercial landings of coho and chinook from 1976 to 1993 indicate coho landings fell from a high in 1976 of 3.6 million pounds in California, to a low in 1992 of 11,000 pounds, a decline of 99%. Steelhead populations also are in decline. NMFS status review of west coast steelhead concluded that steelhead stocks in the northern California ESU are very low, relative to historical estimates, and recent trends are downward.

The low gradient reaches suitable for coho salmon tend to flow either through tidally influenced, open floodplains, or channels confined by steep side slopes or high terraces. Only Geomorphic Unit type 3 offers the kind of channel conditions typically considered ideal for coho: unconfined, pool/riffle channels with point bars, large woody debris and access to the floodplain. Streams with segments that were found to exhibit geomorphic unit type 3 include Railroad Gulch, Pleasant Valley Creek, Duck

Pond Gulch, Tom Bell Creek, and South Fork Albion. These stream segments, however, have been aggraded in the past and show evidence of moderate to high accumulations of fine sediment today. Both the Albion River mainstem (except that which is tidally influenced) and tributaries (except reaches with slopes >8%) show evidence of aggradation. Coarse sediment continues to accumulate on bars and behind LWD and boulders and fine sediment accumulates on bars and in pools. Stream temperature data shows that in most of the watershed water temperatures are within the range conducive to salmonid production. Watershed analysis showed that spawning gravels are moderately embedded throughout much of the Albion River basin. Overall, MRC found that 73% of mapped landslides in the watershed deposit sediment directly into a watercourse.

There is currently an estimated 362 miles of roads in the Albion watershed, which translates to a basinwide road density of 8.43 mile/sq. mile. Native surface roads are 75 percent of the total, followed by rocked roads at 20 percent, and paved roads at 5 percent. MRC is doing some road rehabilitation and putting new roads on ridge tops or side slopes rather than closes to streams. Road erosion accounts for about 13 percent of sediment delivery to the stream. Together with increased erosion from skid trails, which also reflects the increased timber harvest rates, this accounts for 107 tons/sq. mile/year in the 1998-2000 period, which is double the long-term average of 54 tons/sq. mile/year. Background-related sediment inputs account for about 45 percent of the total, and management-related sediment inputs account for about 55 percent of the total.

Measured canopy closure over the mainstem Albion River ranges from 67% to 84% with an average of 74% (uncorrected for variation in stream segment lengths). All other measured stream segments (with the exception of Railroad Gulch, Segment 4) exceed a mean canopy closure of 80%, although these do not reach a 90% closure. In addition to forest harvest activities, some of the limited canopy in the lower Albion may be explained by the extensive wetlands of this region and some of the limited canopy in the upper Albion may be explained by the presence of grassland vegetation and soils. The lower numbers on the mainstem were attributed to the width of the stream, a streamside road, forest harvest, and extensive wetlands.

In general, one can conclude that the riparian zone of the upper portion of MRC's ownership, with the exception of the South Fork Albion River, has a greater potential to recruit large woody debris than does the riparian zone in the lower portion of their ownership. This fact likely reflects differences in native vegetation from the upper to lower portions of the watershed, as well as differences in the rate and timing of logging activities.

The depth of the estuary has reduced from 20 to 25 feet deep in the 1940s to be less than six feet deep with a heavily silted bottom in 1979. Use of the estuary by salmonids may be limited by the low D.O. concentrations in the estuary as well as poor habitat conditions upriver of the estuary, especially the limited number of large, deep, complex pools. Shelter in pools was found to be far less complex than generally recommended for coho salmon and other salmonids in the mainstem and the tributaries surveyed. Pools are too shallow in most of the basin to provide adequate rearing habitat for coho salmon.

The Albion's estuary dissolved oxygen (DO) concentrations indicate that dissolved oxygen may be limiting for salmonids in the upper portions of the estuary late in the season, a condition that may be exacerbated in low flow years. Low DO may inhibit salmonid use in upper portions of the estuary directly, and secondarily by impacting invertebrate populations. Either an increase in freshwater discharge or increase in tidal action could improve DO concentrations. A decrease in water temperatures might also improve dissolved oxygen concentrations.

Other issues of concern are: two trailer parks with septic system problems that need to be investigated, underground storage tanks leaking to ground water near the bluffs overlooking the ocean, Mendocino Mineral Water bottling plant that at one time had a waste discharge requirement and now needs investigation, and new development of homes and septic systems in the Comptche area.

WATER QUALITY GOALS AND ACTIONS

The following listing represents a first-cut delineation of goals and actions to achieve the goals that will be refined through the TMDL development and a Watershed Team.

GOAL 1: Protect surface and ground water MUN, DOM, REC-1, and REC-2 uses

GOAL 2: Protect and enhance beneficial uses associated with anadromous fishes COLD, MIGR, SPWN, EST, COMM

SUMMARY OF WATERSHED ACTIVITIES

The overall emphasis in the WMA was the completion of the TMDL waste reduction strategy for sediment. Increased assessment activities and continued high priority forestry related activities, including any needed outreach to new vineyards, are commensurate with that charge.

Assessment and Monitoring:

Assessment of existing information was used in the development of the TMDL strategy, drawing from existing information contained in plans being developed by the CDF and private timber companies as well as any citizen information that is made available. Data along with some analysis will be available in the KRIS-Albion computerized database package that will probably be released in the fall of 2002.

In-stream water quality and hillslope monitoring in the long term will be associated with determining the effectiveness of management practices to reduce erosion and sedimentation and determining trends towards the desired future in-stream condition. The SWAMP has identified a rotating station low in the watershed for basic water quality parameters. Monitoring needs also include monitoring toxins associated with marina use, boat repair and herbicide use. Monitoring for bacteria and sediment also needs to be increased. Additional in-stream water quality monitoring will be needed associated with the TMDL. NCWAP may be evaluating data and provide a watershed assessment in FY 02-03.

Education and Outreach:

The TMDL process will enhance public and agency participation. Our intent is to improve the recognition of land use impacts on the aquatic environment from nonpoint sources and to foster adaptive management for overall watershed health. Additional outreach to the public will be conducted in junction with the NCWAP effort.

Coordination:

We currently coordinate with local and State agencies on an as-needed basis. Improved coordination is sought as part of the TMDL implementation process and the North Coast Watershed Assessment Program

Core Regulatory:

The current level of point source regulation (inspection, monitoring, and enforcement) on traditional dischargers with some increase in storm water issues is anticipated. Harbor issues associated with fish processing and individual waste disposal systems (primarily on the south shore of the harbor), as

well as construction related problems, are addressed through the core regulatory program and the local oversight of individual systems.

Ground water:

Ground water issues center around petroleum contamination and mill sites and will continue to receive the current level of activity. Groundwater and surface water contamination is suspected at former and existing mill sites that historically used wood treatment chemicals. Discharges of pentachlorophenol, polychlorodibenzodioxins, and polychlorodibenzofurans likely occurred with poor containment typically used in historical wood treatment applications. These discharges persist in the environment and accumulate in surface water sediments and the food chain. Additional investigation, sampling and monitoring, and enforcement actions are warranted, but insufficient resources exist to address this historical toxic chemical problem.

Nonpoint Source:

Continued involvement in forestry, grazing and county road issues is necessary to ensure protection of aquatic resources. The recent listing of coho salmon as threatened under the federal Endangered Species Act has put the spotlight on all land use activities that potentially may increase sedimentation or otherwise affect habitat. The TMDL implementation process will increase work with local agencies and groups regarding land use effects on water quality, following the State Nonpoint Source Management Plan strategy of first emphasizing self-determined implementation of controls to reduce nonpoint source pollution. An outreach program will enhance the effectiveness of the TMDL program.

Timber Harvest:

We have an extensive Timber Harvest program where staff review and inspect timber harvest plans for implementation of the Forest Practice Rules and best management practices to ensure protection of water quality and beneficial uses. We are expanding our program activities on private land in concert with California Department of Forestry and Fire Protection to achieve recovery of this impaired waterbody.

Local Contracts:

We will continue active involvement in the Clean Water Act Section 319(h) and 205(j) grant programs and the Water Bond (Proposition 13) grant program, as well as promoting other programs like the California Department of Fish and Game programs.

Water Quality Planning:

The Basin Plan review process feeds into the activities to the extent issues were identified in the Triennial Review and applicable to the Noyo River watershed. The top priority issue is review of the Nonpoint Source Control Measures

Additionally, the TMDL strategy will be incorporated into the Basin Plan at some future date.

Evaluation and feedback

We will evaluate progress on a yearly basis, the TMDL providing the focus.

BUDGET

We will attempt to fund the highest priority actions as identified in this WMA to the extent funding constraints allow that, and will pursue additional funding to conduct outreach and enforcement activities on new developments of hillside vineyards is needed to pursue the actions we are currently unable to address.

Appendix D contains details on nonpoint source program activities and needs.

Appendix 2.3.7-A

Partial listing of agencies and groups with water quality jurisdiction and interests.

United States

- Environmental Protection Agency
- Fish and Wildlife Service
- National Marine Fisheries Service
- Natural Resources Conservation Service

California State

- California Environmental Protection Agency
- Department of Forestry and Fire Protection
- Board of Forestry
- Department of Fish and Game
- Department of Health Services
- Department of Toxic Substance Control
- Department of Water Resources
- California Coastal Conservancy

Mendocino County

- Water Agency
- Planning Department
- Department of Environmental Health

Local Agencies

- Mendocino County Resource Conservation District
- city planning departments
- city public works departments

Public Interest Groups and Industries

- Coast Action Group
- Pacific Coast Federation of Fishermen's Associations
- Mendocino Redwood Company
- Albion River Watershed Protection Association
- Comptche Land Conservancy
- Jughandle Creek Farm and Nature Center